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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,528	01/23/2001	Chin-Tau Lea	M-9749 US	2407

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EXAMINER
NGUYEN, HANH N

ART UNIT	PAPER NUMBER
2662	7

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/768,528	LEA, CHIN-TAU
	Examiner	Art Unit
	Hanh Nguyen	2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Application filed on 1/23/01*.

2a)☐ This action is **FINAL.** 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *23 and 24* is/are allowed.

6)☒ Claim(s) *1,2,6,16-22,25 and 26* is/are rejected.

7)☒ Claim(s) *3-5,7-15,27 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>3</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

In claim 26, it is not clearly defined on line 5 that" if the first packet is unsuccessful, each

scheduler port controller sends a second packet from a second subqueue to the scheduler switch

fabric to resolve contention"

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

Claims 1, 16, 19-22 and 25 are rejected under 35 USC 103(a) as being unpatentable over

Ganesh et al. (US Pat. No. 6,347,087 B1) in view of **Soirinsuo et al.** (US Pat. No. 6,148,001).

In claims 1 and 25, **Ganesh et al.** discloses, in Fig.3, a switch 50 that receives data

frames at a plurality of ports (ports receiving packets), stores data frames at temporary packet

storage 62 (buffering incoming packet). See col.5, lines 10-40. Destination address & source

address of data frame is analyzed and searched by looking at memory 58 to determine which

ports to forward to. Forwarding decision 72 examines the level of network frame priority such

as high priority frames are typically forwarded by the switch 50 before lower priority frames

(scheduling packet sending which did not have destination address that is at least partially similar

with destination port address of other headers). See col.5, line 42 to col.6, line 10. The switch

fabric functions as a scheduler which provides priority information to the transmitting-side port

(scheduler configured to resolve contention between headers of packets). See col.6, lines 35-38.

Switching fabric 76 receives data frame transmitted from the transmitting port (switch fabric

configured to receive incoming packet). See col.6, lines 35-38. **Ganesh et al.** does not disclose

line cards; switch fabric transmitting packets to ports as specified by destination address; and the

scheduler configured to schedule packets with similar destination headers having priority level

higher than that of other headers.

      Soirinsuo et al. discloses, in Fig.11, a multipoint-to point ATM switch 1100 comprising

line interface 1102 (line card) receiving packets at ports via link 1104 and transmitting packets

to switch fabric 1110 which routes packets via link 1106 (switch fabric transmitting packets to

ports as specified by destination address). Switch controller 1120 schedules transmission of

packet according to weight priorities. See col.10, lines 5-30. Since the invention of **Soirinsuo et**

al. discloses a multipoint-to-point switching, the packets transmitted have the same destination

addresses and transmitted based on priorities; therefore, it would have been obvious to one

ordinary skill in the art to implement the **Soirinsuo et al.** into **Ganesh et al.** the transmit similar

destination addresses packets such that packet with higher priority level is transmitted first, then

lower priority level packet transmitted later. The motivation is to prevent network congestion and

transmit priority packet first.

In claim 16, **Ganesh et al.** does not disclose the scheduler is a single integrated chip. It is a well-known skill in the art to implement the scheduler as a circuit on any chip such as ASIC.

In claims 19-22, **Ganesh et al.** does not disclose the scheduler is configured to receive 64 headers, 128 headers from 32- port precessors or 64 port processors. It is a well-known skill in the art to design an applicable invention with scheduler receiving 64 headers, 128 headers or 32 headers from port processors.

Claims 2, 6, 17 and 18 are rejected under 35 USC 103(a) as being unpatentable over **Ganesh et al.** (US Pat. No. 6,347,087 B1) in view of **Soirinsuo et al.** (US Pat. No. 6,148,001), and further in view of **Caldara et al.**(US Pat. No. 5,748,629).

In claims 2 and 6, **Ganesh et al.** does not disclose input buffer configured to buffer incoming packets in sub-queues; output buffer configured to buffer packets from switch fabric before transmitting. **Caldara et al.** discloses, in Fig.2, input port 20 (input port processor) comprising input buffer 26 which buffers cells 24 into input queues 32. Output port 22 (output port processor) comprises output buffer 28 (output buffer) which buffers cells into output queues 34 (output queues) (input buffer configured to buffer incoming packets in sub-queues / output buffer configured to buffer packets in sub-queues). See col.4, lines 30-50 & col.5, lines 30-42. Therefore, it would have been obvious to one ordinary skill in the art to modify the temporary packet storage of **Ganesh et al.** to include queues for storing incoming packets. The motivation is to retransmit lost packet if there is not acknowledgement received at the switch.

In claims 17 and 18, **Ganesh et al.** does not disclose the switch fabric comprising a first stage of routing modules, a second stage of routing modules. **Caldara et al.** discloses, in Fig.1,

a data switch 13 physically comprising a first stage receiving packet from input port (the switch

fabric comprising a first stage of routing modules); a second stage receiving cells from the first

stage (a second stage of routing modules); and routes the cell 24 to output port according to

destination address. Therefore, it would have been obvious to one ordinary skill in the art to

implement the first and the second stages into **Ganesh et al.** to switch incoming packets to

destination ports according to header address.

Allowable Subject Matter

Claims 23 and 24 are allowed.

The following is an examiner's statement of reasons for allowance:

In claim 23, the prior art does not disclose the scheduling comprising each routing

module in the first stage being coupled to at least two randomizers; each routing module in the

second stage being configured to receive headers from at least two routing modules in the first

stage.

Claims 3-5 and 7-15, 27 and 28 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claims 3, the prior art does not disclose each randomizer comprising a memory storing

randomization permutations; and a routing crossbar coupled to the memory, the routing cross bar

being configured to route sets of headers to routing modules coupled to the randomizer according

to a radomization permutation selected by the pointer.

In claim 7, the prior art does not disclose routing module of the first stage being configured resolve contentions between headers with similar first set of bits in destination addresses by comparing priority bits in the headers, outputting contending headers with highest priority bits on separated output lines.

In claim 27, the prior art does not disclose sending acknowledgement signal to each port processor that sent a header that did not contend with other headers.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Varma et al. (US Pat. No. 5,859,835) discloses Traffic Scheduling System and Method for Packet -Switched Networks.

Hebb et al. (US Pat. No. 6,320,864 B1) discloses Logical Multicasting Method and Apparatus.

Wilford et al. (US Pat. No. 6,687,247 B1) discloses Architecture for High Speed Class of Service Enabled Line Card.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 703 306-5445. The examiner can normally be reached on Monday-Friday from 8AM to 5PM. The examiner can also be reached on alternate

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou, can be reached on 703 305-4744. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hanh Nguyen

June 10, 2004